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Copy 1 of 7
21 March 1963

MEMORANDUM FOR THE RECORD

SUBJECT: Trip Report to Edwards Air Force Base, 13-15 March 1963

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1. General purpose of trip was to follow up observations and recommendations for [] modification resulting from LAC tests. Contact with [] (reference [] 2361-63) indicated availability of a 618 bench test mock-up at Edwards AFB. Verbal coordination with Communications validated possible test dates, and test arrangements were completed. The primary purposes of trip as indicated to Communications were:

a. To determine modified system performance to transients in 28 volt prime power supply.

b. To determine degradation of ground station read-out due to RFI.

c. To demonstrate acceptability of time sharing [] transmission such that receiver would not be continuously locked when [] is triggered.

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2. Prior to start of ground checks (i.e., bench checks), a general briefing on scope and status of [] was given to [] and []. This briefing was followed up at a later date with a general meeting and discussion on possible inputs to the system with section heads, pilots, operations personnel, etc. The general meeting was scheduled to obtain further experienced interpretation of aircraft flight conditions and flight functions. These inputs, both new and old, will be weighed to preclude any redundancy or inadequacy of information channels.

25X1A

3. In the LAC tests, it was noted in ground checks prior to flight test, that intermittent keying of [] transmitter was caused by fluctuations and transients in the ground power supply. Recommendation was made to lengthen circuit time constants to alleviate this condition. The unit checked at Edwards was modified. No problems were observed due to transient conditions in 28 volt supply.

25X1A

4. In trying to determine degradation of ground station read-out due to RFI, it was determined that isolation of the inputs to [] were not adequate to make a valid test. Because of poor isolation between transmitter and antenna which could not be corrected in the time available,

25X1 self inflicted RFI at the high level of transmitter output resulted in
25X1 garbled transmission. In the present system, this condition does not
25X1 exist when [] is properly installed in the aircraft. At this
point in the contract, however, design procedures should be initiated
to alleviate problems which could upset standard maintenance practices.
HRB is setting up similar facilities at their plant to apply proper
isolation techniques to [] circuits and intercabling. This same
facility will be used to determine RFI levels for degradation of ground
stations information response.

25X1 5. Because of the frequency usage allocated to [] it was
25X1 suggested by [] and others, that multiple receiving sites be
25X1 made available at any given time to preclude black-out of a given site

variations and types of visual read-out devices can be utilized and will
be weighed in cooperation with Commo Staff people. It should also be
recognized that established procedures be followed in the assignment of
frequencies for those cases where multiple aircraft may be active in
the same time frame. Transmissions at these frequencies are not limited
to line-of-sight propagation.

25X1 6. The value of time sharing [] transmission under any
25X1 condition should not be underestimated. The concept of time sharing
met with approval from all personnel knowledgeable on [] opera-
tions. At the present time, a time sharing cycle of 0.6 seconds ON and
ten seconds OFF, looks most promising. From both security and infor-
mation aspects, it has been considered that automatic shut down of
[] should occur after one minute of operation unless new
failure appears which will retrigger [] for a complete new
cycle of operation. With this mode of operation, successive failures
in aircraft function will provide a continuous transmission of []
[] information. In the case, however, that only a single
functional failure triggers transmission, [] will shut down
without pilot over-ride if pilot can meet or operate around such
failure.

25X1 7. Recommendations which have been made to HRB for improvement
of the system include further attention to: (a) isolation and shielding
needs of [] its sensors, and its intercabling, (b) provide a
time sharing function under any condition which will allow the receiver
to remain open for an adjustable period of five to ten seconds, (c) to

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redesign the package for aircraft installation, and (d) to determine signal levels and characteristics which can degrade ground station information reception capability. The new package will be mounted on the forward side of 618 housing and will require a reduction in height of 1/2 inch. Other dimensions can be increased as required to allow for reduction in height.

25X1A

151

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